REMARKS

The present application relates to hybrid maize plant and seed 31R88. Claims 1-32 are currently pending in the present application. Applicant respectfully requests consideration of the following remarks.

Detailed Action

A. Request for Continued Examination

The Examiner acknowledges Applicant's Request for Continued Examination under 37 C.F.R. § 1.114 based upon parent Application No. 09/489,784 as acceptable.

B. Claim Objections

Applicant acknowledges that the indication of allowability of claims 8-10, 12-14, 16-18, 21-23, 25-27 and 29-31 are hereby withdrawn in view of the following grounds of rejections.

C. Claims

Applicant acknowledges the addition of new claims 33 through 42. The new claims do not add new matter as there is literal support for the claims in the originally filed specification (pages 25-37, specification).

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 8, 12-19, and 21-32 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 8, 12, 16, 21, 25 and 29 stand rejected as indefinite for failing to further limit the claims on which they depend. The Examiner further states that once the plant has been genetically manipulated, it is no longer the same plant as that recited in the claim from which is depends.

Applicant respectfully traverses this rejection. Applicant submits that although genetic manipulation may decrease the percentage of representative genotype and phenotype of the claimed hybrid 31R88, there will still remain a majority representation of the 31R88 traits in the newly transformed product. In addition, it is known in the art that a hybrid such as 31R88 will represent elite germplasm for character traits of major importance which will subsequently be used in a breeding population to further those elite traits. However, in order to expedite

prosecution, Applicant has now amended claims 8 and 21 by adding the recitation --further comprises a genetic factor conferring male sterility--, and added new claims 41-42, as suggested by the Examiner, thus alleviating this rejection. Support can be found on page 13 of the specification, wherein it states "[i]t should be understood that the inbred can, through routine manipulation of cytoplasmic or other factors, be produced in male-sterile form. Such embodiments are also contemplated within the scope of the present claims."

In addition, Applicant has amended claims 11, 15, 19, 24, 28 and 32 by adding the threshold, having 50% of the alleles, as well as an assayable function, capable of expressing at least a combination of two traits of 31R88. There is literal support for the amended claims found in the specification on page 3 and beginning on page 25 of the instant specification. Further, Applicant has now deleted the areas of adaptability therefore alleviating any objections to the definition of the "regions". Applicant therefore respectfully submits that this language is not indefinite and would be understood by one in the art and is the terminology of use within the art. Therefore, Applicant respectfully requests reconsideration.

Furthermore, in Georgia-Pacific, the Federal Circuit stated that "...the policy of the patent statute contemplates granting protection to valid inventions, and this policy will be defeated if protection were to be accorded to those patents which were capable of precise definition." Georgia-Pacific Corp. v. U.S. Plywood Corp., 258 F.2d 124, 136, 118 U.S.P.Q. 122 (2nd Cir.). While some decisions have advocated the general statement that "[a]n invention must be capable of accurate definition, and it must be accurately defined, to be patentable, (See United Carbon Co. v. Binney & Smith Co., 1942, 317 U.S. 228, 237, 63 S.Ct. 165, 170, 87 L.Ed. 232), the Federal Court has stated that "such general statements, however, must be viewed in the context of circumstances. Objectionable indefiniteness must be determined by the facts in each case, not by reference to an abstract rule." Georgia-Pacific at 136. "Patentable inventions cannot always be described in terms of exact measurements, symbols and formulae, and Applicant necessarily must use the meager tools provided by language, tools which admittedly lack exactitude and precision. If the claims read in light of the specification, reasonably apprise those skills in the art both in utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more." Id. (See North American Vaccine Inc. v. American Cyanamide Co., 7 F.3d 1571, 28 U.S.P.Q.2d 1333, 1339 (Fed. Cir. 1993)). Moreover, it is against the policy of the patent statute to bar patent protection for inventions that are

incapable of precise definition. Georgia-Pacific at 136. With respect to the above-mentioned terms, the claims are as precise as the subject matter of the invention permits. Therefore, Applicant respectfully requests reconsideration of the claims.

In light of the above remarks, Applicant submits that claims 8, 12-19, and 21-32 clearly define and distinctly claim the subject matter Applicant regards as the invention. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 8-19 and 21-32 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner asserts that claims 12, 15, 25, 28, and dependents thereon are broadly drawn to any transgenic plant which contains any heterologous transgene of any sequence conferring any trait, and methods of using the transgenic plants. The Examiner further states that claims 8, 16, 19, 21, 29, 32, and dependents thereon are broadly drawn to any "single gene conversion" plant comprising one or more traits introgressed into the claimed variety by backcrossing or other traditional means, and methods of using these plants. The Examiner states that there is no guidance for the description, characterization, or isolation of a multitude of heterologous coding sequences conferring a multitude of traits. The Examiner also states that there is no guidance regarding the genetic or morphological characteristics of any of a multitude of breeding partners, or the resultant progeny. Given the claim breadth and lack of guidance, the Examiner states the specification fails to provide an adequate written description of the genus as broadly claimed.

Applicant respectfully traverses this rejection. Applicant asserts the specification supplies an extensive definition and description of 'transgene' and transgenes of interest. (See generally pages 30-36 for an extensive list of potential transgenes.) Applicant also notes, a person having skill in the art could insert a DNA gene into a selected maize plant. Applicant has defined transgenes in the present application in the paragraph that spans pages 25-26 as follows:

> With the advent of molecular biological techniques that have allowed the isolation and characterization of genes that encode specific protein products, scientists in the field of plant biology developed a strong interest in *engineering the genome of plants to contain and express foreign genes, or additional genes* (perhaps driven by different promoters) in order to alter the traits of a plant in a specific manner. *Such foreign, additional and/or modified genes are referred to herein collectively as "transgenes".* Over the last fifteen to twenty years several methods for producing transgenic plants have been developed, and *the present invention, in particular embodiments, also relates to transgenic versions of the claimed hybrid 31R88.*

(emphasis added) The present application clearly describes and defines a transgene to be a gene transferred into a plant wherein the product of that gene is expressed. This expression will confer a new or improved trait into that plant. However, this gene is but a tiny fraction of the entire genome. In other words, the plant of claim 12 is distinguishable from the prior art plants just as is hybrid 31R88 without the transgenes. Further, the plant of claim 12 also contains a trait(s) that is either improved or additional to the traits of the maize plant of claim 2. The 31R88-transgene plant still expresses the unique combination of traits of 31R88 without the transgenes with the exception of the traits expressed by the transgenes. The trivial modifications introduced by the transgenes to the unique invention of 31R88 are clearly supported and described in the present application. In addition, Applicant respectfully submits that "[t]he test for definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. . . . If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more. . . . The degree of precision necessary for adequate claims is a function of the nature of the subject matter." Miles Laboratories, Inc. v. Shandon Inc., 997 F.2d 870 (Fed. Cir. 1993).

Furthermore, Applicant has now amended claims 11, 15, 19, 24, 28 and 32 by adding the threshold, having 50% of the alleles, that limits the variation permitted among the genus, as well as an assayable function, capable of expressing at least a combination of two traits of 31R88. There is literal support for the amended claims found in the specification on page 3 and beginning on page 25 of the instant specification. Plant breeding techniques known in the art and used in the maize plant breeding program include, but are not limited to the following: recurrent selection backcrossing, pedigree breeding, restriction length polymorphism enhanced selection, genetic marker enhanced selection and transformation. With the amendments to the above-stated claims, Applicant has identified a transgenic 31R88 plant (claim 12), a 31R88 plant further

comprising genes transferred by backcrossing (claim 14), or a maize plant wherein at least one ancestor is maize variety 31R88 (claim 15) by defining a particular threshold that limits variation and reciting a functional test to identify such plants. In addition, Applicant has drafted new claims 33-42 which Applicant believes come within the purview of the written description requirement and do not add new matter. Under the written description requirement, Applicant should be allowed to claim the progeny of a cross of maize plants crossed with 31R88 with phenotypic characteristics since distinguishing identifying characteristics in the chemical and biotechnological arts, dealing with DNA, are those such as: partial structure, physical and/or chemical properties, functional characteristics, known or disclosed correlation between structure and function, method of making, and combinations of the above. In plants, these identifying characteristics are those detectable in the phenotype which are manifested through gene expression. Claims to a particular species of invention are adequately described if the disclosure of relevant identifying characteristics are present in the application. Again, one of ordinary skill in the art is reasonably apprised in knowing that a plant crossed with 31R88 will result in a plant having half of the genetic contribution of 31R88. A further limitation set by Applicant is that the plants must be capable of expressing a combination of at least two phenotypic characteristics of 31R88.

The Examiner also asserts that Hunsperger et al., Kraft et al., and Eshed et al. teach that it is unpredictable whether the gene or genes responsible for conferring a phenotype in one plant genotypic background may be introgressed into the genetic background of a different plant, to confer a desired phenotype is said different plant.

Applicant respectfully traverses these rejections. Applicant respectfully submits that Hunsperger et al. does not teach what the Examiner proposes in column 3, lines 26-46. On the contrary, Hunsperger et al. teaches that the allelic DNA genetic factor that results in dwarfism of a petunia plant as disclosed has been incorporated into other genetic backgrounds of the petunia species. (See column 2, line 67 to column 3, lines 1-4). Therefore the Examiner has not shown that the introgression of a gene in one genetic background in any plant of the same species, as performed by sexual hybridization is unpredictable. Besides, Applicant's disclosure is sufficiently enabling because the specification describes transformation of hybrid maize 31R88 starting on page 25. The advent of molecular biology techniques have allowed isolation and characterization of genes that encode specific proteins. On page 30, third paragraph, Applicant

discloses that for a transgenic plant, which shows high levels of expression, a genetic map can be generated to identify approximate chromosomal locations of integrated DNA. Such methods are incorporated by reference. Thus, Applicant provides a sufficient enabling disclosure for those skilled in the art to generate the 31R88 plant with a transgene. Applicant may create genetic maps to identify the integrated DNA, which would assist in determining introgression. Furthermore, on page 30 of the instant specification, Applicant discloses that plants can be genetically engineered to express various phenotypes of agronomic interests. Such change indicated or those which confer resistance to pests or disease, resistance to herbicides (page 33) or genes to confer value-added traits (page 34). Applicant then discloses on page 35 methods for 31R88 transformation. Moreover, on page 36, following transformation of the 31R88 plant, target tissue expression of the selectable marker genes as described in the specification allow the preferential selection of transformed cells, tissues, and/or plants using regeneration and selection methods, which are well-known in the art. Such predictability refers to the ability of one skilled in the art to extrapolate the disclosed or known results of the claimed invention. Applicant's disclosure enables one skilled in the art following transformation to preferentially select the transformed cells using selectable markers. Applicant respectfully requests Examiner to withdraw this rejection.

The Examiner also asserts Kraft et al. teach, for example, that linkage disequilibrium effects and linkage drag prevent the making of plants comprising a single gene conversion, and that such effects are unpredictably genotype specific and loci-dependent in nature, that linkage disequilibrium is created in breeding materials when several lines become fixed for a given set of breeding materials, and therefore it is an unpredictable effect in plant breeding, on page 323 of the reference, column 1, lines 7-15.

Again, Applicant respectfully submits that Kraft et al. does not stand for the proposition for what the Examiner is asserting. The Examiner states "that very little is typically known about the plant breeding materials, and therefore it is an unpredictable effect in plant breeding (page 323, column 1, line 7 to line 15)." This section is taken from Kraft et al. at page 323 column 2, lines 5-8, but Kraft et al. is merely stating that "very little is known about the distances spanned by linkage disequilibria in breeding materials", not little is known about plant breeding materials. Kraft et al. simply teaches that they found an increase in linkage disequilibrium for tightly linked markers in sugar beets (see page 324, column 2, lines 2-15). Further, the reference teaches that

mapped position of markers are not useful for discerning distances between two lines where the levels of linkage disequilibrium is low, particularly in well-defined heterotic groups (see page 326, column 1, lines 1-11).

Finally, Applicant respectfully submits that a deposit of at least 2,500 seeds of Variety 31R88 was made on May 3, 2002, as submitted in the July 2, 2002 Preliminary Amendment. Therefore, Applicant asserts the written description requirement set forth in 35 U.S.C. § 112 is met, particularly in light of the fact that, as stated above, Applicant has reduced the invention to practice and described the invention by virtue of the deposit in combination with the knowledge of a breeder of ordinary skill in the art, thereby demonstrating its "possession" of the invention. Enzo Biochem Inc., v. Gen-Probe, Inc., 63 U.S.P.Q.2d (BNA) 1609, 1613 (Fed. Cir. 2002) ("In light of the history of biological deposits for patent purposes, the goals of the patent law, and the practical difficulties of describing unique biological materials in a written description, we hold that reference in the specification to a deposit in a public depository, which makes its contents accessible to the public when it is not otherwise available in written form, constitutes an adequate description of the deposited material sufficient to comply with the written description requirement of § 112, 1."); see also MPEP § 2163.02 (8th ed. Aug. 2001) ("Under Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 U.S.P.Q.2d 1111, 1117 (Fed. Cir. 1991), to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed.") In addition, the Federal Circuit Court remanded the Enzo case to the District Court and stated that "on remand the court should determine whether a person of skill in the art would glean from the written description, including information obtainable from the deposits of the claimed sequences, subsequences, mutated variants, and mixtures sufficient to demonstrate possession of the generic scope of claims." Enzo Biochem Inc., v. Gen-Probe, Inc., 63 U.S.P.Q.2d (BNA) 1609, 1615 (Fed. Cir. 2002). In view of these previous deposits, the rejections under 35 U.S.C. § 112, first paragraph should be removed (MPEP § 2411.02).

In light of the above remarks, Applicant respectfully requests reconsideration and withdrawal of the rejections to claims 8-19 and 21-32 under 35 U.S.C. § 112, first paragraph. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph.

Issues Under 35 U.S.C. § 102/103

The Examiner rejects claims 11, 15, 19, 24, 28, and 32 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Roundy et al. (U.S. Patent 5,773,682).

Applicant respectfully traverses this rejection and requests reconsideration of 11, 15, 19, 24, 28, and 32. The Applicant would like to point out that the inventions 31R88 and 3568 are not the same inventions. Nor are their differences minor morphological variations. Applicant submits that the claimed plant cannot be rendered obvious as it possesses a unique combination of traits which confers a unique combination of genetics. Moreover, Applicant claims a method of making a plant which did not previously exist. Pursuant to the recent Federal Circuit decision, Elan Pharmaceuticals, Inc. v. Mayo Foundation for Medical Education & Research, 304 F.3d 1221, (Fed. Cir. 2002), "a novel patented product is not "anticipated" if it did not previously exist." Id. This is the case whether or not the process for making the new product is generally known. Id. The invention 31R88 has not previously existed as it is the result of crossing two maize inbred lines GE528776 and GE492452.

Furthermore, when looking at the tables of both inventions, hybrids created using 31R88 as one of the parents are clearly not anticipated by hybrids made using 3568 as one of the parents. The inventions 31R88 and 3568 differ for various traits that are not minor. For example, 31R88 has a relative maturity based on the Comparative Relative Maturity Rating System as reported in Table 1, of 119 (page 16). As reported in Table 1 of 5,773,682 Patent, 3568 demonstrates a relative maturity of approximately 104. Another example, 31R88 has above average resistance to Common Rust when compared with 3568. As reported in Table 1, 31R88 has a resistance of 7 (page 17). As reported in Table 1 of 5,773,682 Patent, 3568 has no teaching. Another example, as reported in Table 1, 31R88 demonstrates a resistance to Gray Leaf Spot of 7 (page 17). As reported in Table 1 of the 5,773,682 Patent, 3568 has a resistance of 4. A third example of the differences is that 31R88 exhibits above average resistance to Stewart's Wilt as compared to 3568. As reported in Table 1, 31R88 has an above average resistance of 7. As reported in Table 1, 3568 has no teaching. Other traits which differ between the two inventions include: hybrid type (31R88 flint, 3568 dent), length of ear node leaf (31R88 91.3, 3568 88.7), and resistance to Corn Lethal Necrosis (31R88 above average, 3568 no teaching).

The aforementioned examples all illustrate that there are large differences between 31R88 and 3568. The examples listed are not exhaustive but they do give ample evidence that the inventions are not the same. Furthermore, when looking at the tables of both inventions, hybrids created using 31R88 as one of the parents are clearly not anticipated by hybrids made using 3568 as one of the parents.

Applicant further submits that the claims do not simply recite traits, but instead recites these specific traits only to the extent that they are "31R88" traits; thereby being derived from the seed/germplasm of 31R88. Note, variety with respect to agricultural variety, can be defined as a group of similar plants that by structural features and performance can be identified from other varieties within the same species. When looking at maize plants it would be possible for one ordinarily skilled in the art to find many traits that are similar between varieties such as the disease resistance or growth habit. Nonetheless, the claim also recites that the claimed plant must have 31R88 as an ancestor further indicating that these traits must originate from the 31R88 plant not 3568. In response to the Examiner's contention that one could not distinguish the claimed plant from the prior art which shows each of these traits, Applicant submits that one can easily tell by reference to the plants breeding history, which can be confirmed by its molecular profile whether the plant did indeed have plant 31R88 as an ancestor and expressed two or more "31R88" traits. Further, any phenotypic trait that is expressed is a result of a combination of all of the genetic material present in the plant, and 31R88 will have its own unique genetic background that will give rise to the claimed plant and this profile along with its combination with other plants will result in a unique combined genetic profile that is the product claimed.

Furthermore, there is no expectation of success that the crossing of the Hybrid 3568 with some yet to be identified plant would yield a plant with two of the traits enumerated in the claimed invention and at least 50% of its alleles from 31R88 because that particular plant did not begin with the claimed seed 31R88 which is essential. Applicant asserts that it is not the phenotypic characteristics alone that are claimed and taught in the instant invention. It is a combination of physiological and morphological characteristics, as claimed, which make the present Hybrid non-obvious and not anticipated over Roundy et al. '682. Further, In re Thorpe, states that "a product by process claim may be properly rejected over prior art teaching the same product produced by a different process", as noted by the Examiner. In re Thorpe, 227 U.S.P.Q. 964, 966 (Fed. Cir. 1985). However, Applicant submits that this is not the same product

physiologically or morphologically as the cited prior art as can be evidenced by one skilled in the art through analysis of the data tables in each. In addition, it is impermissible to use hindsight reconstruction and the benefit of Applicant's disclosure to pick among pieces which are present in the art, there must be some suggestion to make the combination and an expectation of success. In re Vaeck, 20 U.S.P.Q.2d 1434 (Fed. Cir. 1991). Further, any phenotypic trait that is expressed is the result of the genetic material present in the plant, and 31R88 will have its own unique genetic background that will give rise to the claimed plant and this profile along with its combination with other plants will result in a unique combined genetic profile that is the product claimed. Thus, the present application deserves to be considered new and non-obvious compositions in their own right as products of crossing when 31R88 is used as a starting material.

In light of the above, Applicant respectfully requests the Examiner reconsider and withdraw the rejection to claims 11, 15, 19, 24, 28, and 32 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Roundy et al. (U.S. Patent 5,773,682).

Issues Under 35 U.S.C. § 103

Claims 11, 15, 19, 24, 28, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Roundy et al. (U.S. Patent 5,773,682).

Applicant respectfully traverses this rejection. When looking at a maize plant it would be possible to find many traits that are similar between varieties such as the color of flowers or growth habit. However, to say there are similarities in phenotype between two varieties is not the same as saying that the two varieties have the same morphological and physiological characteristics as a whole, or that one is an obvious variant of the other. Further, similarity in phenotype does not mean that the two varieties will perform similarly, particularly in a breeding program. As stated above, variety with respect to agricultural variety may be defined as a group of similar plants that by structural features and performance can be identified from other varieties within the same species.

Applicant submits that Hybrid 3568 does not exhibit the same characteristics as 31R88. Applicant will illustrate how 31R88 and 3568 are different. Roundy et al. '682 does not teach or suggest hybrid maize plant 31R88 developed by a maize breeding program or the use of hybrid

maize plant 31R88 in the production of tissue culture. It must be recognized that the hybrids provided by this invention are themselves unusual and unobvious results of a common process (see pages 16-24, specification). Nonetheless, Hybrid 31R88 deserves to be considered as a new and non-obvious composition in its own right as does its tissue culture as products of the process when 31R88 is used as starting material. Applicant points out that 31R88 is a unique plant hybrid which never before existed until Applicant filed the application and until its deposit of the same. While Roundy et al. '682 does teach the general regeneration of maize plants from tissue culture techniques, it does not teach or suggest the use of the unique maize hybrid 31R88. As will be demonstrated below, several morphological and physiological characteristics of Hybrid 31R88 are either different from or not present in 3568.

For example, Hybrid 31R88 has a relative maturity based on the Comparative Relative Maturity Rating System of 119. The varieties are also different with respect to length of ear node leaf, and disease resistance. Differences between the two varieties are summarized in the table below:

CHARACTERISTICS	31R88	3568
Comparative Relative Maturity Rating System	119	104
Length of ear node leaf (cm)	91.3	88.7
Disease Resistance	Above Average Resistance to Common Rust (7), Corn Lethal Necrosis (6) and European Corn Borer (1st generation) (8)	No teaching for Common Rust and Corn Lethal Necrosis Resistance to European Corn Borer (1st generation) (4.1)

This comparison clearly shows that 3568 does not exhibit the characteristics of hybrid 31R88. Further, the present application clearly shows in Table 1 at pages 16-18 and Tables 2-4 at pages 19-24 that hybrid 31R88 exhibits above average resistance to Gray Leaf Spot, above average resistance to Stewart's Wilt, a lower drydown rate, higher plant height and the aforementioned characteristics.

In light of the above, Applicant respectfully requests the Examiner reconsider and withdraw the rejection to claims 11, 15, 19, 24, 28, and 32 under 35 U.S.C. § 103(a).

Applicant acknowledges that claims 1-7 and 20 are allowed. Applicant further acknowledges that claims 1-10, 12-14, 20-23 and 25-27 are free of the prior art because the claims neither suggest nor teach the 31R88 hybrid maize plant or a maize plant having all of the morphological and physiological characteristics of the 31R88 hybrid maize plant of the instant claims or methods of use. This clearly indicates that the hybrid 31R88 as a whole is considered distinguishable from the prior art for the purposes of novelty and non-obviousness. In any event, the deposit of the representative seed of Hybrid 31R88, as completed on May 3, 2002, should satisfy the description requirement. In light of the above, Applicant respectfully submits the above rejections are clearly improper and request reconsideration and withdrawal of the rejections.

Conclusion

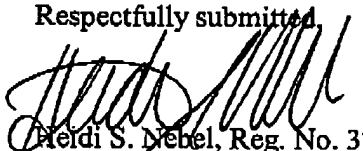
In conclusion, Applicant submits in light of the above amendments and remarks, the claims as amended are in a condition for allowance, and reconsideration is respectfully requested.

No additional fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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Application No. 09/489,784

AMENDMENT — VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

The paragraph beginning at page 25, line 32 has been amended as follows:

With the advent of molecular biological techniques that have allowed the isolation and characterization of genes that encode specific protein products, scientists in the field of plant biology developed a strong interest in engineering the genome of plants to contain and express foreign genes, or additional, or [modifed] modified versions of native or endogenous genes (perhaps driven by different promoters) in order to alter the traits of a plant in a specific manner. Such foreign, additional and/or modified genes are referred to herein collectively as "transgenes". Over the last fifteen to twenty years several methods for producing transgenic plants have been developed, and the present invention, in particular embodiments, also relates to transgenic versions of the claimed hybrid maize line 31R88.

In the Claims

Please amend claims 6, 8, 11, 15, 19, 21, 24, 28 and 32 as follows:

6. (Twice Amended)

[A] The tissue culture according to claim 5, the cells or protoplasts of said cells having been isolated [of the tissue culture being] from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks.

8. (Twice Amended)

The maize plant of claim 2 wherein said maize plant [has been manipulated to be male sterile] further comprises a genetic factor conferring male sterility.

11. (Twice Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 2, wherein said maize plant has derived at least 50% of its alleles from 31R88 [said maize plant] and is capable of expressing a combination of at least two 31R88 traits [which are not significantly different from 31R88 when determined at a 5% significance level and when grown in the same environmental conditions, said traits] selected from the group consisting of: a relative maturity of 119 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, yield potential under low to moderate yield environments, stalk lodging resistance, root lodging resistance, staygreen, drought tolerance, resistance to Gray Leaf Spot, resistance to common rust, resistance to Southern Leaf Blight, and brittle stalk resistance[, and suited to the Southeast region of the United States].

15. (Twice Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 21, wherein said maize plant has derived at least 50% of its alleles from 31R88 [said maize plant] and is capable of expressing a combination of at least two 31R88 traits [which are not significantly different from 31R88 when determined at a 5% significance level and when grown in the same environmental conditions, said traits] selected from the group consisting of: a relative maturity of 119 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, yield potential under low to moderate yield environments, stalk lodging resistance, root lodging resistance, staygreen, drought tolerance, resistance to Gray Leaf Spot, resistance to common rust, resistance to Southern Leaf Blight, and brittle stalk resistance[, and suited to the Southeast region of the United States].

19. (Twice Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 16, wherein said maize plant has derived at least 50% of its alleles from 31R88 [said maize plant] and is capable of expressing a combination of at least two 31R88 traits [which are not significantly different from 31R88 when determined at a 5% significance level and when grown in the same environmental conditions, said traits] selected from the group

consisting of: a relative maturity of 119 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, yield potential under low to moderate yield environments, stalk lodging resistance, root lodging resistance, staygreen, drought tolerance, resistance to Gray Leaf Spot, resistance to common rust, resistance to Southern Leaf Blight, and brittle stalk resistance[, and suited to the Southeast region of the United States].

21. (Twice Amended)

The maize plant of claim 2 wherein said maize plant [has been manipulated to be male sterile] further comprises a genetic factor conferring male sterility.

24. (Twice Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 24, wherein said maize plant has derived at least 50% of its alleles from 31R88 [said maize plant] and is capable of expressing a combination of at least two 31R88 traits [which are not significantly different from 31R88 when determined at a 5% significance level and when grown in the same environmental conditions, said traits] selected from the group consisting of: a relative maturity of 119 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, yield potential under low to moderate yield environments, stalk lodging resistance, root lodging resistance, staygreen, drought tolerance, resistance to Gray Leaf Spot, resistance to common rust, resistance to Southern Leaf Blight, and brittle stalk resistance[, and suited to the Southeast region of the United States].

28. (Twice Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 25, wherein said maize plant has derived at least 50% of its alleles from 31R88 [said maize plant] and is capable of expressing a combination of at least two 31R88 traits [which are not significantly different from 31R88 when determined at a 5% significance level and when grown in the same environmental conditions, said traits] selected from the group consisting of: a relative maturity of 119 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, yield potential under low to moderate yield environments,

stalk lodging resistance, root lodging resistance, staygreen, drought tolerance, resistance to Gray Leaf Spot, resistance to common rust, resistance to Southern Leaf Blight, and brittle stalk resistance[, and suited to the Southeast region of the United States].

32. (Twice Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 29, wherein said maize plant has derived at least 50% of its alleles from 31R88 [said maize plant] and is capable of expressing a combination of at least two 31R88 traits [which are not significantly different from 31R88 when determined at a 5% significance level and when grown in the same environmental conditions, said traits] selected from the group consisting of: a relative maturity of 119 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, yield potential under low to moderate yield environments, stalk lodging resistance, root lodging resistance, staygreen, drought tolerance, resistance to Gray Leaf Spot, resistance to common rust, resistance to Southern Leaf Blight, and brittle stalk resistance[, and suited to the Southeast region of the United States].

Please add new claims 33 – 42 as follows:

33. (New)

A method of making a hybrid maize plant designated 31R88 comprising:

crossing an inbred maize plant GE528776, deposited as PTA-4282 with a second inbred maize plant GE492452, deposited as PTA-4278; and

developing from the cross a hybrid maize plant representative seed of which having been deposited under ATCC Accession Number PTA-4272.

34. (New)

A method of making an inbred maize plant comprising:

obtaining the plant of claim 2 and

applying double haploid methods to obtain a plant that is homozygous at essentially every locus, said plant having received all of its alleles from maize hybrid plant 31R88.

35. (New)

A method for producing an 31R88 progeny maize plant comprising:

(a) growing the plant of claim 2, and obtaining self or sib pollinated seed therefrom; and

(b) producing successive filial generations to obtain a 31R88 progeny maize plant.

36. (New)

A maize plant produced by the method of claim 35, said maize plant having received all of its alleles from hybrid maize plant 31R88.

37. (New)

A method for producing a population of 31R88 progeny maize plants comprising:

(a) obtaining a first generation progeny maize seed produced by crossing the maize plant of claim 2 with a second maize plant;

(b) growing said first generation progeny maize seed to produce F_1 generation maize plants and obtaining self-pollinated seed from said F_1 generation maize plants; and

(c) repeating the steps of growing and harvesting successive filial generations to obtain a population of 31R88 progeny maize plants.

38. (New)

The population of 31R88 progeny maize plants produced by the method of claim 37, said population, on average, deriving at least 50% of its alleles from 31R88.

39. (New)

A 31R88 maize plant selected from the population of 31R88 progeny maize plants produced by the method of claim 37, said maize plant deriving at least 50% of its alleles from 31R88.

40. (New)

The method of claim 37, further comprising applying double haploid methods to said F_1 generation maize plant or to a successive filial generation thereof.

41. (New)

A method of producing a male sterile maize plant comprising transforming the maize plant of claim 2 with a genetic factor conferring male sterility.

42. (New)

The method of claim 41 wherein a male sterile maize plant is produced.